

Name: _____

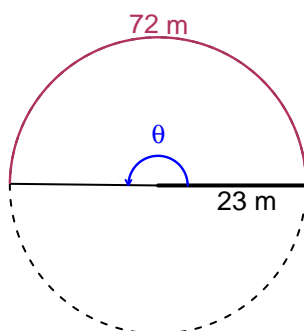
Date: _____

Trig Final (TEST v658)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

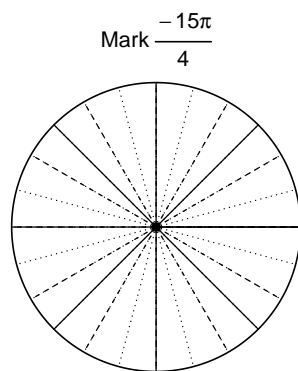
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 72 meters. The radius is 23 meters. What is the angle measure in radians?

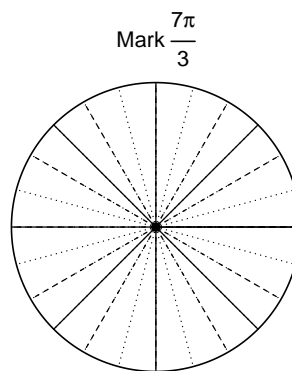


Question 2

Consider angles $-\frac{15\pi}{4}$ and $\frac{7\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(-\frac{15\pi}{4}\right)$ and $\cos\left(\frac{7\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\sin(-15\pi/4)$



Find $\cos(7\pi/3)$

Question 3

If $\cos(\theta) = \frac{-9}{41}$, and θ is in quadrant III, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 6.15 meters, a midline at $y = 4.89$ meters, and a frequency of 8.26 Hz. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).